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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/297,399	04/29/1999	MASARU MIYAMOTO	3404/0F546-U	9716

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MARTIN E GOLDSTEIN
DARBY & DARBY
805 THIRD AVENUE
NEW YORK, NY 10022

EXAMINER

SHOSHO, CALLIE E

ART UNIT PAPER NUMBER

1714

DATE MAILED: 12/03/2001

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N.	Applicant(s)
	09/297,399	MIYAMOTO, MASARU
Examiner	Art Unit	
Callie E. Shosho	1714	

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

THE MAILING DATE OF THIS COMMUNICATION

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 15 October 2001 .

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-9 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____

4) Interview Summary (PTO-413) Paper No(s). _____
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/15/01 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 6346014.

JP 6346014 discloses a water based ink composition for ball-point pens which comprises pigment, polar solvent comprising water and other solvent (such as ethylene glycol), pH controlling agent, and 0.01-10% thickener which swells in an alkaline medium resulting in an increase in viscosity of the ink. The thickener contains both a hydrophobic group such as styrene and a carboxyl group (claim 1, page 4, line 23-page 5, line, page 5, lines 12-13, page 7, lines 5-14, page 7, line 24-page 8, line 5, and page 8, lines 9-10). Given that styrene, which is also

known as vinylbenzene, has the formula $\text{CH}_2=\text{CH}-\text{C}_6\text{H}_5$, it is clear that styrene is both a cyclic hydrocarbon, i.e. contains a ring, and an aromatic hydrocarbon, i.e. contains benzene.

Although there is no explicit disclosure that the thickener is associative, given that the thickener swells in an alkaline medium and contains both hydrophobic group and carboxyl group as presently claimed, it is clear that the thickener is inherently associative as presently claimed.

In light of the above, it is clear that JP 6346014 anticipates the present claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-2 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. (U.S. 5,580,374) either alone or in view of Doolan et al. (U.S. 5,425,806) and Shay et al. (U.S. 5,478,602).

Okumura et al. disclose an aqueous ink composition for ball point pens wherein the ink contains water, polar solvent, pigment, pH adjustor, and 3% thickener comprising polymers containing carboxyl groups and hydrophobic groups such as styrene (col.1, line 9, col.2, lines 50-55, col.3, line 10, col.5, lines 36 and 54, col. 6, lines 20-28). Given that styrene, which is also known as vinylbenzene, has the formula $\text{CH}_2=\text{CH}-\text{C}_6\text{H}_5$, it is clear that styrene is both a cyclic hydrocarbon, i.e. contains a ring, and an aromatic hydrocarbon, i.e. contains benzene.

The difference between Okumura et al. and the present claimed invention is the requirement in the claims (a) that the thickeners are not explicitly referred to as alkali-swelling associative thickeners and (b) amount of thickener.

With respect to difference (a), it is noted that the thickeners in Okumura et al. are not explicitly referred to as alkali-swelling associative thickeners as required in the present claims.

However, it is significant to note that Okumura et al. disclose thickeners identical to those presently claimed and used in the present invention, i.e. thickeners containing carboxyl groups and hydrophobic groups, as well as ink compositions identical to those presently claimed, and thus, it is natural to infer that these polymers would function the same as the thickeners presently claimed regardless of what they are called by Okumura et al.

Support for this position of inherency of properties based on identity of compositions in is found in Titanium Metals Corp. V. Banner, 227 USPQ 773 (Fed. Cir. 1985) where the court held that in comparing claimed and reference compositions it was immaterial what properties the

compositions had or who discovered the properties of the compositions because "the composition is the same and thus must necessarily exhibit the properties" and In re Spada, 15 USPQ 2d 1655, 1658 (Fed. Cir. 1990), "products of identical chemical composition can not have mutually exclusive properties" and "a chemical composition and its properties are inseparable".

Further, particular attention is drawn to the specific types of thickeners disclosed by Okumura et al., for example, ammonium salt of styrene (hydrophobic group) and maleic acid (carboxyl group). One of ordinary skill in the art would have recognized that the presence of the ammonium salt, which is alkaline in an aqueous solution, allows the polymer to be compatible with an alkaline medium, from which it follows that the polymer swells in an alkali medium and that the presence of the hydrophobic group would allow the thickener to associate with other hydrophobic components in the ink.

Alternatively, Doolan et al., which is drawn to associative thickeners suitable for use in inks, discloses that the mechanism by which these thickeners function involves hydrophobic association between the hydrophobic species in the thickeners and other hydrophobic surfaces present in the aqueous composition (col., line 29, col.2, lines 41-54 and col.3, lines 7-23). Shay et al., which is drawn to alkali-swellable associative thickeners suitable for use in inks, discloses that the thickeners contain both hydrophobic groups and carboxyl groups, and the carboxyl groups function by reacting with alkali (col.1, lines 46-50, col.3, lines 8-11 and col.13, line 10). Both Shay et al., col.1, lines 21-56, and Doolan et al., col.3, lines 10-16, disclose the advantages of associative thickeners as compared to conventional thickeners.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art that Okumura et al.'s disclosure of thickeners identical to those presently claimed would function as alkali-swelling associative thickeners especially in view of the presence of both carboxyl groups and hydrophobic groups in the thickener or, alternatively, that thickeners which contain carboxyl groups and hydrophobic groups as disclosed by Okumura et al. are indeed alkali-swelling associative thickeners given the disclosure of both Doolan et al. and Shay et al. of the function of the carboxyl groups and hydrophobic groups as described above, and thereby arrive at the claimed invention.

With respect to difference (b), while there is no explicit disclosure that the thickeners of Okumura et al. are used in an amount of 0.1-2% as presently claimed, it would have been within the skill level of one of ordinary skill in the art to determine how much thickener to add to the ink composition in order to produce an ink which does not clog the pen tip (viscosity too high) and does not lose adequate flow control (viscosity too low).

Therefore, it would have been obvious to one of ordinary skill in the art to choose amounts of thickener, including those presently claimed, in order to control the viscosity of the ink depending on the other ingredients, i.e. water, solvent, etc. present in the ink, the type of instrument in which the ink is to be utilized, etc. and thereby arrive at the claimed invention.

6. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. either alone or in view of Doolan et al. and Shay et al. as applied to claims 1-2 and 5-6 above, and further in view of either Kobayashi et al. (U.S. 4,822,417) or JP 54138732.

The difference between Okumura et al. either alone or in view of Doolan et al. and Shay et al. and the present claimed invention is the requirement in the claims of a pigment surface treated with a resin and/or surfactant.

Okumura et al. disclose that there is no restriction on the type of pigment used, but do not explicitly disclose surface-treated pigments.

Kobayashi et al., which is drawn to a writing ink composition, disclose the use of pigments surface treated with resins. The motivation for using such pigments is that they are preferred for their dispersability, stability, and workability (col.2, lines 26-33).

Alternatively, JP 54138732, which is drawn to a writing ink composition, discloses the use of pigments surface treated with resin. The motivation for using such pigments is that impart excellent stability and water-resistance to the ink compositions (claim, page 1, second paragraph, and page 2, first full paragraph).

In light of the motivation for using a surface-treated pigment disclosed by either Kobayashi et al. or JP54138732 as described above, it therefore would have been obvious to one of ordinary skill in the art to use this type of pigment in the ink of Okumura et al. in order to produce an ink that has excellent dispersability, stability, and water-resistance, and thereby arrive at the claimed invention.

7. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 6346014 in view of either Kobayashi et al. (U.S. 4,822,417) or JP 54138732.

The disclosure with respect to JP 6346014 in paragraph 3 above is incorporated here by reference.

The difference between JP 6346014 and the present claimed invention is the requirement in the claims of a pigment surface treated with a resin and/or surfactant.

Kobayashi et al., which is drawn to a writing ink composition, disclose the use of pigments surface treated with resins. The motivation for using such pigments is that they are preferred for their dispersability, stability, and workability (col.2, lines 26-33).

Alternatively, JP54138732, which is drawn to a writing ink composition, discloses the use of pigments surface treated with resin. The motivation for using such pigments is that impart excellent stability and water-resistance to the ink compositions(claim, page 1, second paragraph, and page 2, first full paragraph).

In light of the motivation for using a surface-treated pigment disclosed by either Kobayashi et al. or JP54138732 as described above, it therefore would have been obvious to one of ordinary skill in the art to use this type of pigment in the ink of JP 6346014 in order to produce an ink that has excellent dispersability, stability, and water-resistance, and thereby arrive at the claimed invention.

8. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 6346014 in view of Shay et al. (U.S. 5,478,602).

The disclosure with respect to JP 6346014 in paragraph 3 above is incorporated here by reference.

The difference between JP 6346014 and the present claimed invention is the requirement in the claims of specific type of thickener.

Shay et al. disclose the use of associative thickener comprising carboxyl group and hydrophobic group wherein the hydrophobic group includes halogenated alkyl, organosilicon, and fluorinated carbon groups. It is disclosed that the thickeners are suitable for use in any aqueous composition including ink. The motivation for using such thickener is that it is highly efficient, better resists hydrolysis, and provides better rheology (col.1, lines 51-56, col.2, lines 55-57 and 62-64, col.3, lines 4-5 and 45-60, col.5, lines 66-67, col.6, lines 39 and 53-55, col.7, lines 26-28 and 39, col.13, line 10).

In light of the motivation for using specific associative thickener disclosed by Shay et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such thickener in the ink of JP 6346014 in order to produce an ink which has desired rheology, and thereby arrive at the claimed invention.

Response to arguments

9. Applicant's arguments filed 10/15/01 have been fully considered but they are not persuasive.

Specifically, applicant argues that the thickeners of either JP 6346014 or Okumura et al. do not comprise the specific hydrocarbon groups presently claimed.

However, it is noted that JP 6346014 discloses styrene/acrylic thickener while Okumura et al. disclose alkali salts of copolymers of styrene and maleic acid. Thus, both JP 6346014 and Okumura et al. disclose styrene hydrophobic groups. The hydrophobic groups presently claimed include cyclic hydrocarbon and aromatic hydrocarbon. Given that styrene, which is also known

as vinylbenzene, has the formula $\text{CH}_2=\text{CH}-\langle\odot\rangle$, it is clear that styrene is both a cyclic hydrocarbon, i.e. contains a ring, and an aromatic hydrocarbon, i.e. contains benzene.

With respect to newly added claims 7-9, it is agreed that neither JP 6346014 or Okumura et al. disclose thickeners comprising halogenated alkyl, organosilicon, or fluorinated carbon group, which is why JP 6346014 is now also used in combination with Shay et al. which teaches the use of associative thickeners comprising these groups.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mikami et al. (U.S. 5,962,552) disclose ink jet ink comprising acrylic-silicone resin, pigment, pH controller, water, and solvent. However, there is no disclosure that the acrylic-silicon resin functions as an associative dispersant which swells in an alkaline medium and increases the ink viscosity as presently claimed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

CS
Callie Shosho
November 17, 2001

Vasu Jagannathan
VASU JAGANNATHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700